Manufacturing Footprint Strategy

Making the Right Things in the Right Places

IfM Briefing Day

Tuesday 21 May 2013

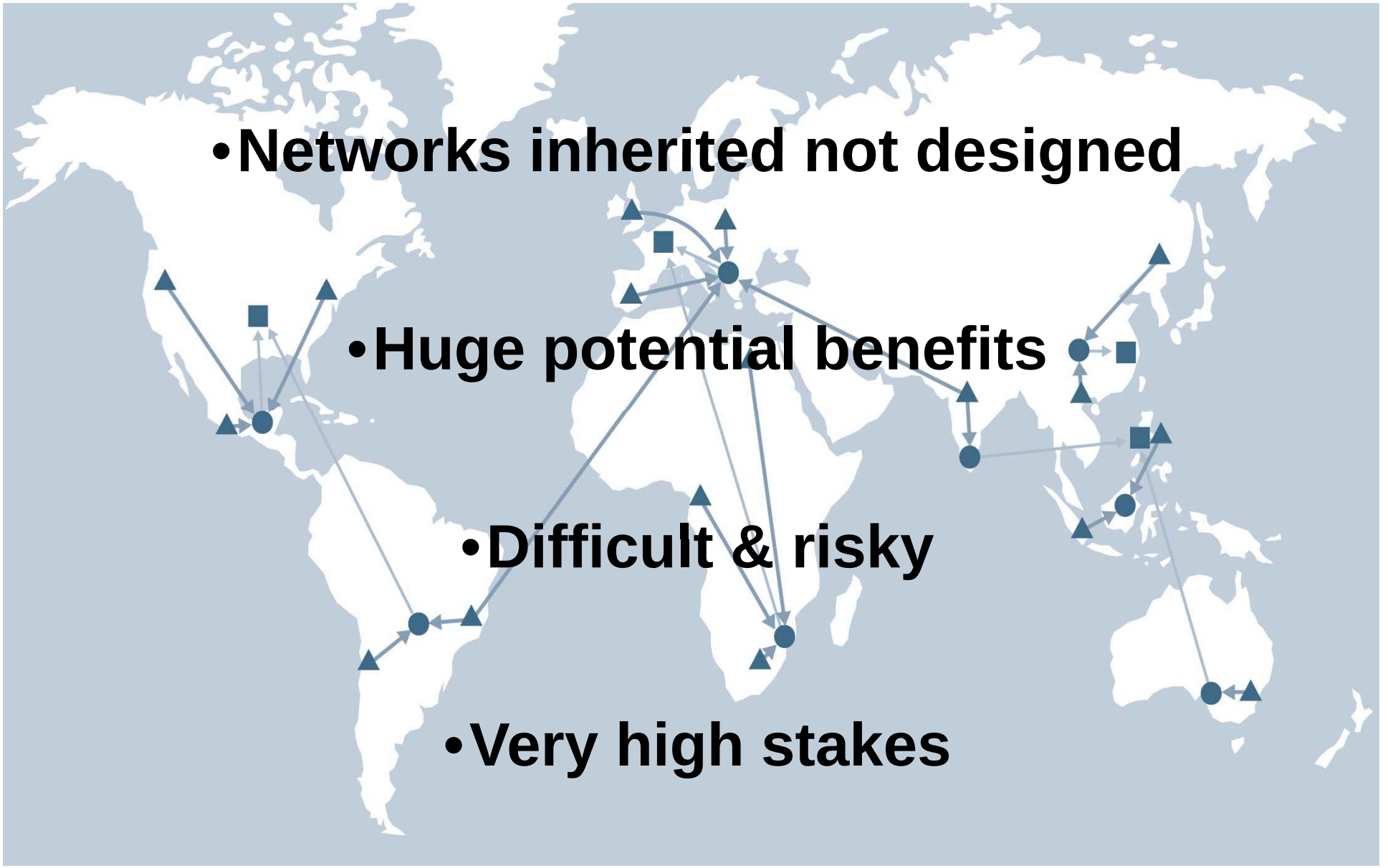
Paul Christodoulou
Principal Industrial Fellow
pac46@cam.ac.uk

Don Fleet
Principal Industrial Fellow
def25@cam.ac.uk

AGENDA

1. Why lean, offshoring & outsourcing are not enough
2. IfM toolkit & applications
3. Global network design – theory & recent case study
4. Summary & questions

WHY LEAN, OFFSHORING & OUTSOURCING ARE NOT ENOUGH

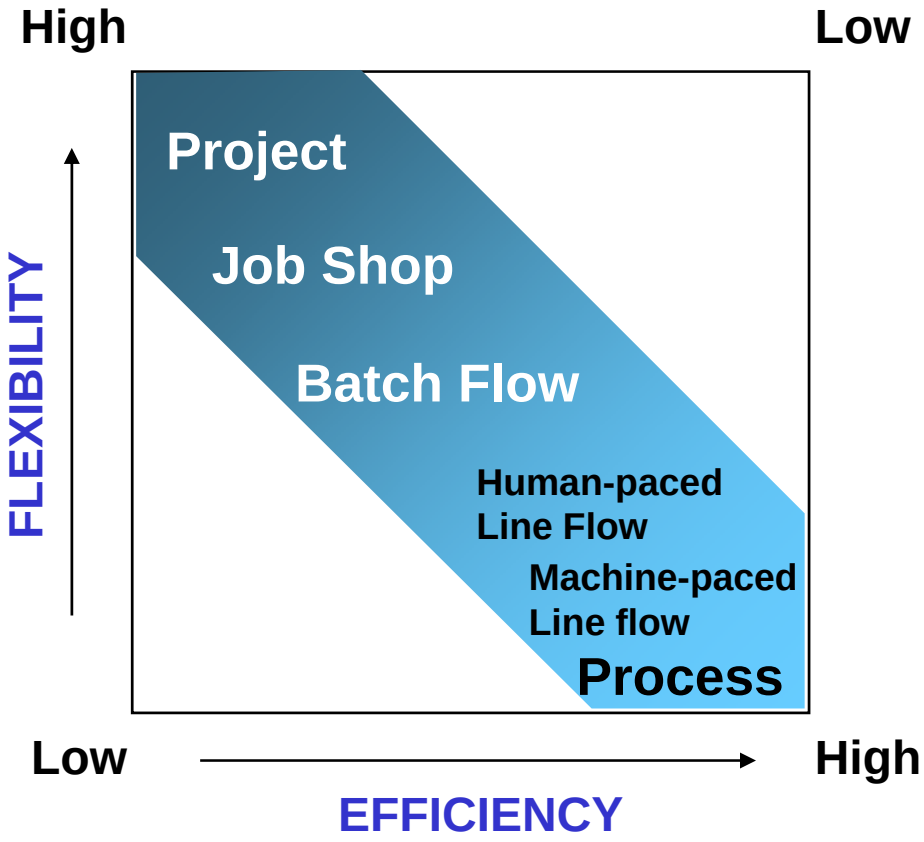


AGENDA

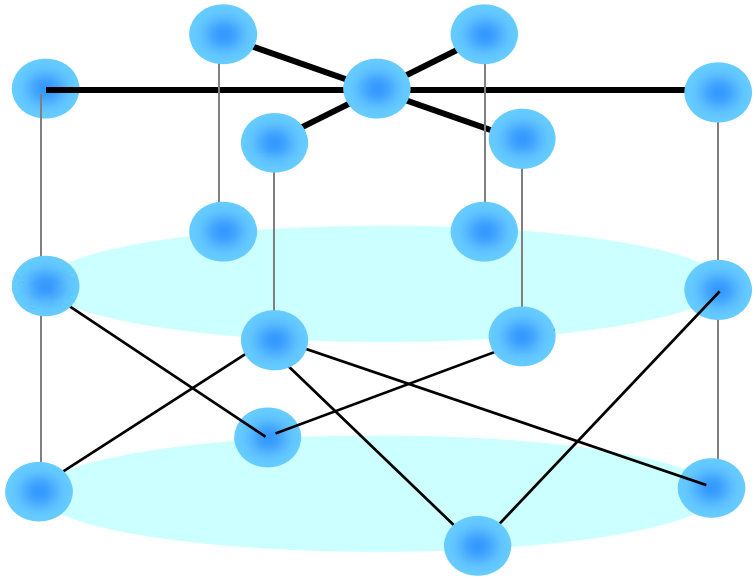
1. Why lean, offshoring & outsourcing are not enough
2. IfM toolkit & applications
3. Global network design – theory & recent case study
4. Summary & questions

IfM RESEARCH ROOTS

From plant thinking…



…to network thinking

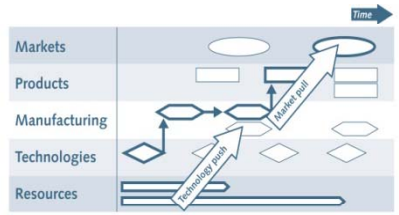


International Manufacturing Networks to Develop Global Competitive Capabilities
Shi and Gregory 98

OUTLINE OF IfM APPROACH

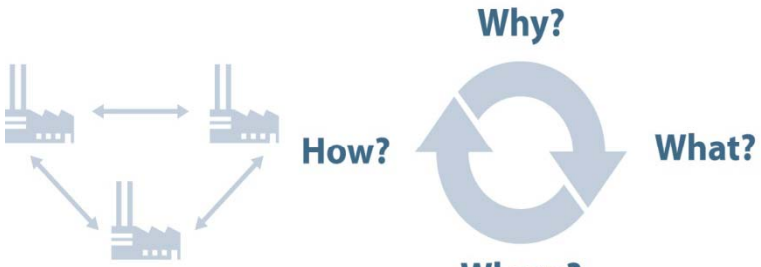
1. ROADMAPPING

Business imperatives
Technology trends



2. MAKE-or-BUY

Production core competences
Strategic & low cost sourcing



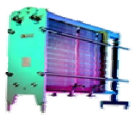
4. MANUFACTURING MOBILITY

Defining executable projects
Transferring production

3. GLOBAL NETWORK DESIGN

Number/location/roles of plants
Network synergy

SUMMARY OF APPLICATIONS

	Large Vehicles	Film Products	Food Equipment	Transport Services	Speciality Chemicals	Hydraulic Pumps	Electrical Devices	FMCG	Plastic Products	Petrochem	Aerospace	Plastic Toys	White Goods
													
Scale	$40bn, 110 plants	$4bn, 50 plants	$1bn, 12 plants	£2bn, 17 plants	$2bn, 21 plants	$3bn, 14 plants	$15bn, 200 plants	$5bn, 20 plants	$1.5bn, 45 plants	$10bn, 60 plants	$16bn, 40 plants	$2bn, 12 plants	$16bn, 45 plants
Outcome	10 year evolutionary strategy	5 year aggressive realign-ment	2 year turnaround plan	5 year strategy	5 year consolidation / pre-merger plan	Staged evolutionary strategy	Footprint design model	Continuous strategy process	5 year re-configuration plan	Ideal future network	Impact of new process technologies	Revised vision following turnaround	In depth process for value creation
Hard benefits	Significant cost savings	$50-60m pa declared cost savings	Business survival	20% cost saving	Significant cost savings	Access to growth markets	Significant cost savings	Enablement of global expansion	Significant cost savings	Fundamental shift in network approach	Optimum return on investment	Scalable model for high growth	In process
Soft benefits	New processes across 33 SBUs	120 top managers aligned with change	Minimised business disruption	M&A integration framework	Refocusing of core business	Trained trainers for staged roll-out	Post M&A optimisation	Pre-empt need for periodic restructuring	Consensus across complex organisation	Distillation of key drivers	Filled key gap in corporate process	Clarity on core competences	In process

13 very different companies

CATERPILLAR CASE STUDY

Overview

- $40bn sales, 100+ plants worldwide
- 24 month strategy co-development
- Implemented across 30 SBUs in complex organisation
- Evolution towards 10 year vision

Benefits

- New process & common language to engage the senior team
- Broke the default approach of reinvesting in the status quo
- Framework to guide ongoing investment

Strategy process development

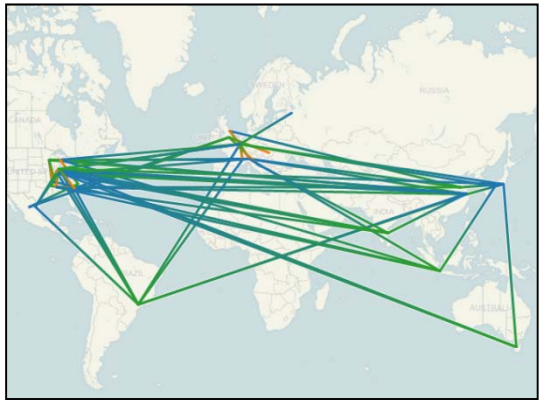
Pilot implementations

Roll-out by SBU

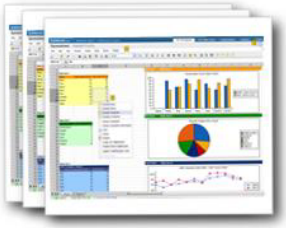
Cost optimiser

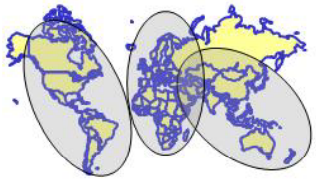
Embed in annual strategy process

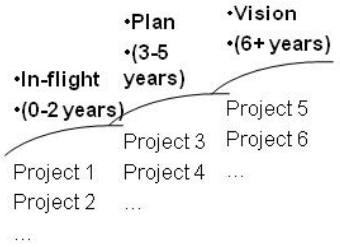
2003 **2004** **2005** **2006** **2007** **2008** **2009**



Prime Product & Component Vision → Trisphere-level integration → Enterprise-level prioritization



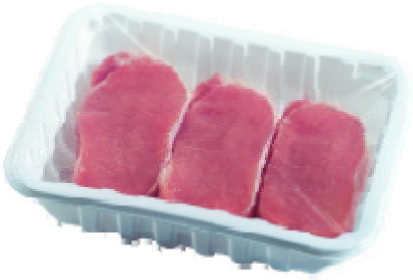




IfM MANAGEMENT TECHNOLOGY POLICY

UNIVERSITY OF CAMBRIDGE

SEALED AIR CASE STUDY



Overview

- $4bn sales, 50+ plants worldwide
- 18 month strategy co-development
- 120 senior managers involved
- Phase 1 now complete

Benefits

- Reinvestment in process technology leadership
- Leading positions in emerging markets
- $55m declared cost savings so far

Strategy development

Strategy review

Phase 1 implementation

Phase 2 implementation

2004 **2005** **2006** **2007** **2008** **2009** **2010**

Strategy Announcement July 2006
• step change in costs
• access to emerging markets
• reinvestment in process technology leadership
Rights issue required to fund $250m
Target annual savings $50m

Strategy Update
Latest financial evaluation:
• investment will total $200m
• savings of $45m in 2009, increasing to $55m in 2010.
Press Release January 2008

Strategy Update
We remain committed to our growth strategies, which capitalize on our strong global footprint.
Press Release July 2008

AGENDA

1. Why lean, offshoring & outsourcing are not enough
2. IfM toolkit & applications
3. Global network design – theory & recent case study
4. Summary & questions

"WHERE": USING THEORY IN PRACTICE

High Level Process

1. Decide on Framework for Analysis
2. Identify Potentially Attractive Network Footprints
3. Assess Impact on Strategic Capabilities

Underlying Model

NETWORK CONFIGURATION
- DESIGN ELEMENTS

Affects

NETWORK CAPABILITIES
- PROJECTED BENEFITS

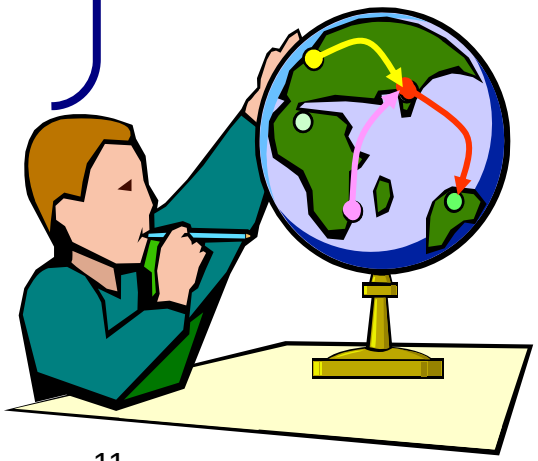
Plant Disposition
- Number / dispersion
- Locations

Individual Plant Roles
- Many inter-related factors

Coordination of Network
- Material flows
- Mgt control

Many interacting relationships

- Customer Responsiveness
- Landed Cost
- Access to Resources
- Agility
- Innovation/Learning
- Control of Risk



PLANT ROLE PRINCIPLES

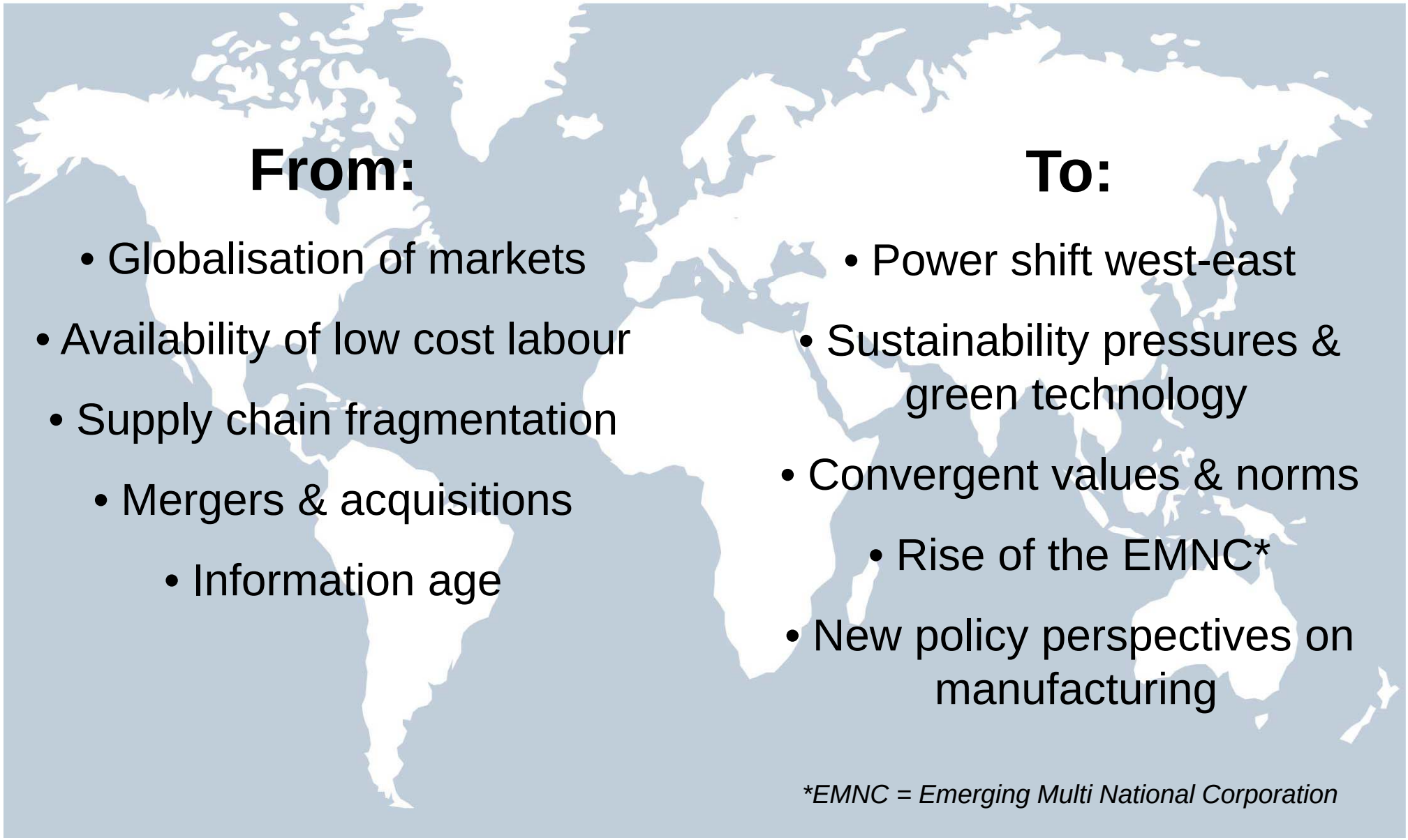
PLANT FOCUS	PLANT LOCATION FACTORS
• By product family	• Close to customer
• By process technology	• With access to skilled labour
• By lifecycle stage	• With access to low cost labour
• By customer	• Close to other strategic resources
• By volume vs. variety	• Co-location with existing capability or capacity
• Load shedding plants	• Co-located with other plants in campuses
• By leadership role	• Co-located with product design teams
PLANT SIZE / NUMBER	• Within emerging / protected markets
• Minimum size	• Not located in particular countries
• Maximum size	• Aligning production and sales by currency block
• Dual sourcing	• Government incentives / low cost capital

The relevance and relative importance vary with company context

AGENDA

1. Why lean, offshoring & outsourcing are not enough
2. IfM toolkit & applications
3. Global network design – theory & recent case study
4. Summary & questions

ARE WE ON THE CUSP OF A NEW ERA IN TERMS OF MACRO-LEVEL DRIVERS ?



From:

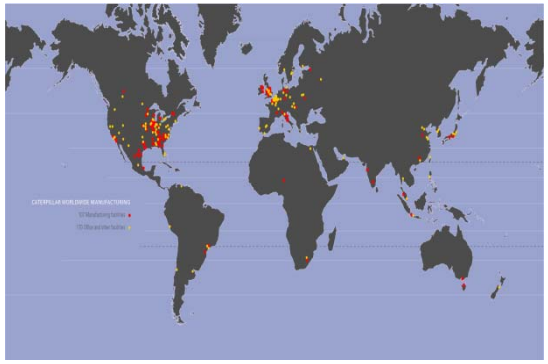
- Globalisation of markets
- Availability of low cost labour
- Supply chain fragmentation
- Mergers & acquisitions
- Information age

To:

- Power shift west-east
- Sustainability pressures & green technology
- Convergent values & norms
- Rise of the EMNC*
- New policy perspectives on manufacturing

**EMNC = Emerging Multi National Corporation*

IN SUMMARY



- **Understanding ‘why we need to change’**
  - Imperatives & roadmaps
- **‘What’ before ‘Where’**
  - Mfg core competences, purpose of partnerships
- **‘Where’: plant roles before location**
  - Creating synergy from difference
- **‘How’: making it happen**
  - Competences in manufacturing mobility

ANY QUESTIONS

IfM report available to download from:

http://www.ifm.eng.cam.ac.uk/services/overview/large/footprint/